REMARKS

The Office Action dated October 13, 2005, has been received and carefully noted. The amendments made herein and the following remarks are submitted as a full and complete response thereto.

Claim 1 and the specification have been amended. Claims 1-5 are pending in the present application and are respectfully submitted for consideration.

Specification

The specification was objected to as containing a minor informality. The Applicant respectfully submits that the specification has been amended to define the acronym of "LSI" as Large Scale Integration.

Accordingly, Applicant requests withdrawal of the objection.

Objection to the Claims

Claim 1 was objected. The Applicant submits that the claim amendments to claim 1 obviate the objection, therefore requests the withdrawal of the objection.

Rejection of Claims 1, 2 and 5 under 35 U.S.C. § 103(a)

Claims 1, 2 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the acknowledged prior art (hereinafter "APA") in view of Voldman (U.S. Patent No. 6,628,159). This rejection is respectfully traversed.

In making the rejection, the Office Action acknowledges that the "acknowledged prior does not teach that transistor Tr2 switches the source and drain in accordance with a voltage supplied to a back gate, nor does it teach a first diode connected

between first power source terminal VD and the back gate or a second diode connected between second power source terminal VS and the back gate."

Furthermore, the Office Action characterizes Voldman as allegedly disclosing,

> a transistor 43 switching a source and drain connected to a pad 40 and ground terminal, respectively, a first diode 90 connected between pad 40 and the back gate of transistor 43, first diode 90 supplying a positive discharge voltage generated in pad 40 to the back gate; a second diode 90 connected between the ground terminal and the back gate, second diode 90 supplying a positive discharge voltage generated in the ground terminal to the back gate. See Fig. 9. Transistor 43 is a pass transistor in a protection circuit against ESD events and voltage surges. First and second diodes 90 are disclosed to be part of a circuit control network that controls the voltage of the body of transistor 43 and provides overvoltage protection to transistor 43. From Fig. 9, it can be seen that a positive discharge voltage generated in pad 40 would be supplied to the back gate of transistor 43 through first diode 90. It can also be seen that a positive discharge voltage generated in the ground terminal could be supplied to the back gate via second diode 90 by simply switching the direction of second diode 90 so that the cathode is connected to the back gate and the anode to the ground terminal, since it is well know in the art that a diode can be used to allow unidirectional flow current based on its orientation. Transistor 43 acts as a switch, wherein the source and drain are interchangeable. The voltage supplied to the back gate, in reference to the potentials of the other terminals of transistor 43 (specifically, which is more positive), determines which terminal of transistor 43 serves as the source and which terminal serves as the drain (in other words, the direction of current flow through transistor 43). Therefore, transistor 43 switches the source and drain in accordance with the voltage supplied to the back gate.

The Applicant respectfully disagrees with the Office Action's characterization of Voldman, and respectfully traverses.

It is submitted that in one example of the present invention, a diode D1, D2 supplies a discharge voltage generated in a power source terminal VD, Vs to the back gate of a transistor Tr1, and the transistor Tr1 switches its source and drain being connected to the power source terminals VD and VS.

As a result, even if a negative ESD surge based on the power source terminal VS occurs in the power source terminal VD of the present invention (i.e., if a negative discharge voltage is generated in the power source terminal VD), a current according to the discharge voltage flows through a source-drain path without producing a parasitic action in a well tap of the source and drain, thereby preventing the transistor Tr1 from being damaged.

In contrast, Fig. 9 of Voldman fails to teach that a negative discharge voltage is applied to pad 40, and also does not teach about prevention of a current flowing in a well tap of the transistor 43.

Therefore, in order to prevent a parasitic action from damaging the transistor 43, Voldman does not give a motivation to switch the source and drain of the transistor 43 when a negative discharge voltage is applied to the pad 40. It is therefore respectfully submitted that it would not be obvious to switch a direction of the second diode 90.

In addition, it is respectfully submitted that it is not obvious that voltage supply from the diode D1, D2 to the back gate of the transistor Tr1 switches the source and drain of the transistor Tr1. Therefore, it is respectfully submitted that it would also not be obvious to switch the direction of the Voldman second diode 90.

Therefore, the Applicant submits that APA in view of Voldman fail to disclose each and every element recited in claim 1 of the present application.

As claims 2 and 5 depend from claim 1, the Applicant submits that each of these claims incorporates the patentable aspects therein, and are therefore allowable for at least the reasons set forth above with respect to the independent claim, as well as for the additional subject matter recited therein.

Accordingly, the Applicant respectfully requests withdrawal of the rejection.

Rejection of Claims 3 and 4 under 35 U.S.C. § 103(a)

Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the APA in view of Voldman, applied to claim 1 above, and further in view of Krzentz (U.S. Patent No. 5,796,296). In addition, claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable over the APA in view of Voldman, as applied to claim 1 above, and further in view of Zhou (U.S. Patent No. 5,446,644). These rejections are respectfully traversed.

APA in view of Voldman are discussed above with respect to claim 1. As claims 3 and 4 depend from claim 1, the Applicant submits that each of these claims incorporates the patentable aspects therein, and are therefore allowable for at least the reasons set forth above with respect to the independent claim, as well as for the additional subject matter recited therein.

Accordingly, the Applicant respectfully requests withdrawal of the rejection.

Conclusion

In view of the above, the Applicant respectfully submits that each of claims 1-5 recites subject matter that is neither disclosed nor suggested in the cited prior art. The Applicant also submits that the subject matter is more than sufficient to render the claims non-obvious to a person of ordinary skill in the art, and therefore respectfully request that claims 1-5 be found allowable and that this application be passed to issue.

If for any reason, the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact the Applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper has not been timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, referencing docket number 107337-00050.

Respectfully submitted,

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Enclosures: Petition for Extension of Time (two months)